Elbit AVIONIC SYSTEMS

THE SKY IS OUR FIELD

The systems that have been there and back.

That's The Elbit Advantage.

Avionic systems come and go, but not many have been there and back. Ours have.

Since 1971 Elbit has been the source of systems which have led to consistent mission success in the air-to-ground and air-to-air battles that have made world headlines. Equipping Israeli Skyhawks, Phantoms and Kfirs with generations of Weapon Delivery and Navigation Systems, Stores Management Systems, Mission Computers, Displays, and more. Reassuring them in flight with full ground support facilities, test and training equipment and depot maintenance procedures. And most important, listening and learning. Gaining fresh insight and new ideas from veteran combat pilots. Bringing all of their experience back down to earth where it is used as a basis to revamp, refine, redesign Elbit Avionic Systems to be even better than before. This unique Elbit advantage can be yours.

Today, every Israel Air Force fighter is equipped with Elbit Avionic Systems. Systems that have proven themselves time and time again. Increasing survivability, and hit probability, reducing required attack time. Requiring fewer pilots, aircraft, missions and sorties needed to successfully accomplish the same objectives. That in itself, is an unparalleled return on the investment.

The Elbit WDNS Family

INS-based, digital computerized Weapon Delivery and Navigation Systems with head-up displays, accurate navigation and advanced A/A, A/G modes.

- designed on Hands-on-Throttle-and-Stick principle (HOTAS).
- navigates and arrives at target at ETA.
- releases a vast variety of weapons in uncanned paths.
- obtains A/A missile firing envelope information provided on head-up display.
- operates "snap shoot" and LCOS modes of gun firing.

Already implemented into the Kfir C-7 and Mirage, Elbit's WDNS family of systems is enhanced by smart weapons handling, with stores management for weapon release with maximum efficiency and safety. Head-up and head-down displays provide the pilot with all relevant operational objectives.

Low-Cost WDS

A cost-effective update or ideal system for light attack aircraft, advanced interceptors and trainers. The moderately priced WDS is the intermediate stage between full performance weapon delivery and navigation systems and low-cost/performance gunsights. Elbit's LCWDS is based on the installation of three new units: central mission computer (CMC), head-up display (HUD) and control terminal unit (CTU), and interfacing them with aircraft sensors and indicators.

The Phantom F-4 2000 Program

Retrofit through the next decade

Drawing on over a decade of experience designing new components and systems that retrofit into existing ones, Elbit has embarked on a major update program for the Phantom F-4. By replacement of outdated equipment with state-of-the-art systems, the retrofit is aimed at optimizing combat performance, resolving current maintenance problems, and providing a modern, flexible avionic architecture with built-in systems/armament growth potential.

As integrator of the entire avionic structure, including a modernized HUD and radar system, Elbit's role in the retrofit is of central importance. The core of the new avionic suite is Elbit's recently-developed digital avionic interface computer (AIC) - the same computer that has earned a place in all F-16C&Ds flown by the Israel Air Force. It will facilitate

integration of new air-to-air and air-to-ground weapons and sensors, and their interface with the aircraft's current systems. The 1750 AIC has also been selected for inclusion into the radar as a data processor.

As part of the comprehensive update, Elbit is challenged with the development and production of avionic integration stations (AIS), O.I.D. level support equipment, and operational flight programs (OFP).

The result - enhanced performance and extended life for the Phantom. Operational capabilities to meet future threats and ensure the fighter's superiority in battle through the year 2000.

Mission Computers

The general purpose MC's diversified capabilities can encompass EW, display, digital radar, stores management and avionics integration.

Its high computational power and performance and lightweight, compact size make it the ideal central computer of aircraft - coordinating communication between all avionic subassemblies.

Equipped with software development tools, Elbit's MC allows the customer to develop and integrate his own software, adapting the computer to his specific needs and operational requirements.

ACE-3

- fully compatible with MIL-STD 1750A and has MIL-STD 1553 MUX BUS
- modular, high performance, airborne general purpose computer, designed for fighter mission management
- computation performance - 550 kops
- 64K words of memory, updatable at line level (expandable to 128K)
- built of standard components - no custom chips
- full hardware and software development plus maintenance support
- chosen for all F-16C and Ds flown by the Israel Air Force

ACE-4

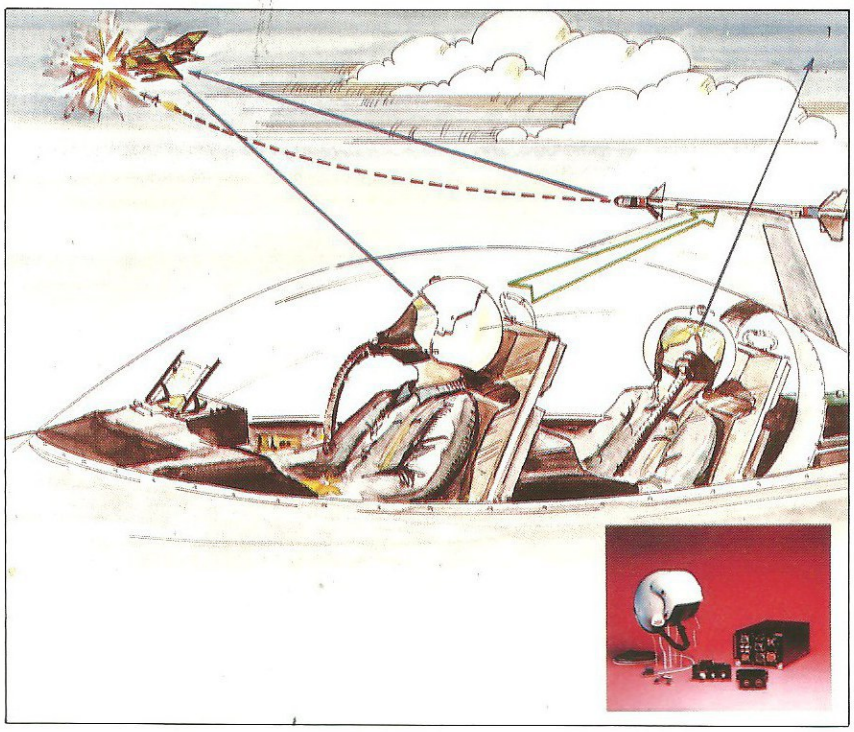
- the lightest MIL-STD 1750 airborne computer
- computation performance 600 kops (DAIS MIX)
- 128K words of memory with built-in growth capability updatable at line level
- controller remote terminal for two MIL-STD 1553 MUX BUS interface channels (multi-protocol)
- advanced LSI and VLSI technology
- highly modular design

DASH

Display and Sight Helmet System

DASH represents a major advance in air-to-air combat.
The system lets pilots aim their weapons simply by looking at the target. It measures pilot's line of sight (LOS) in relation to the aircraft and transfers this information to other aircraft systems. Aircraft sensors, avionics and weapons are thus enslaved to the target.

Fully implementing the concept of flying head out of cockpit, DASH is adaptable to any fighter/attack aircraft with simple installation and will accommodate



advanced missiles and smart weapon lock-on envelopes.

An optimum interface of man, machine and mission, DASH virtually integrates the pilot's natural motor versatility with the specialized capabilities of a weapon/sensor system:

- assists the pilot to detect, identify and shoot earlier.
- shortening lock-on procedure in A/A and A/G modes.
- exploitation of more "hit" situations.
- enlarging the pilot's field of vision - permitting him to look anywhere with normal head movements.
- allowing the pilot to fly head up and off boresight.
- displaying vital information (missile line of sight, missile status, flight info, warnings) on the visor.

HALO

Advanced Helicopter Avionics for safe nighttime, nap-of-the-earth flight

HALO, an advanced avionics suite, offers a unique cost-effective answer to the mounting challenges faced by today's battlefield helicopters.

- The Night Vision Goggles/Head-Up Display (NVG/HUD) displays vital information collimated with the external view, thus eliminating the need for the pilot to look inward at the instrument panel.
- Accurate navigation is achieved by integration of a Doppler radar with a Global Positioning System (GPS) to provide position accuracy. Symbolic display of the flight path and helicopter position, along with other navigational data enable the pilot to fly at high speed from one point to the next without losing track.
- An intelligence and obstacles data base, along with accurate navigation and processing capabilities offer the pilot ample warning when proximity to threats is detected.

HALO cockpit design provides the pilot with optimum conditions for system operation, substantially reducing crew workload. The cost-effective system is adaptable to a broad range of helicopters, from light attack to heavy cargo and assault.

Stores Management Systems

When you equip with Elbit's SMS you invest in a system with built-in longevity - managing and releasing today's weapons and armaments with utmost efficiency and adaptable to those that may still be on the drawing boards.

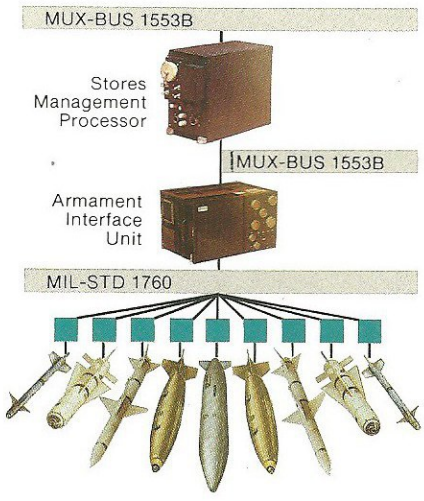
Elbit's system targets the most effective air-to-air and air-to-ground weapons programs. It manages mistake-proof and precise delivery while handling smart weapons and displaying stores status on the cockpit display.

The SMS eliminates thumb errors, by switching from a dizzying array of controls (weapons selector, fuse

selector, weapon data insertion panel, gun switch, mission cool switch, all stores switches, release program selector and switches, jettison selector), to programmed, pushbutton accuracy.

Easing the pilots burden, lessening workload and stress, Elbit's SMS ensures maximum safety from accidental weapon release and optimum mission success.

SMS for Israel's newest fighter the Lavi



Display Systems

Elbit's displays are perfectly clear. Strikingly simple. Free of flicker and confusing redundancy. Relevant, accurate, and always on time. Informing the pilot of virtually every aspect of aircraft operation. Conveniently located. Meeting his eye head-up or head-down. Built, according to how he is. Easily discernible during the blackest of night, or brightest of days. Designed with the insight that only experience can provide.

The system comprises two display computers with color symbol generation, one color display, and two monochromatic MFDs. The system can be incorporated into one-or-two-seater aircraft.

Computer

- MIL-STD 1750A CPU (600 kops)
- program and display memory: 128K words
- MIL-STD 1553 MUX-BUS controller
- cockpit control interface
- other input/output channels: video, analog and discrete

Display Capabilities

- two stroke, two raster and VTR at same time
- independent symbol generators for each display
- stroke color symbol generator
- full symbol programmability

Growth potential in

- computation • memory • electronic modules.

OPHER

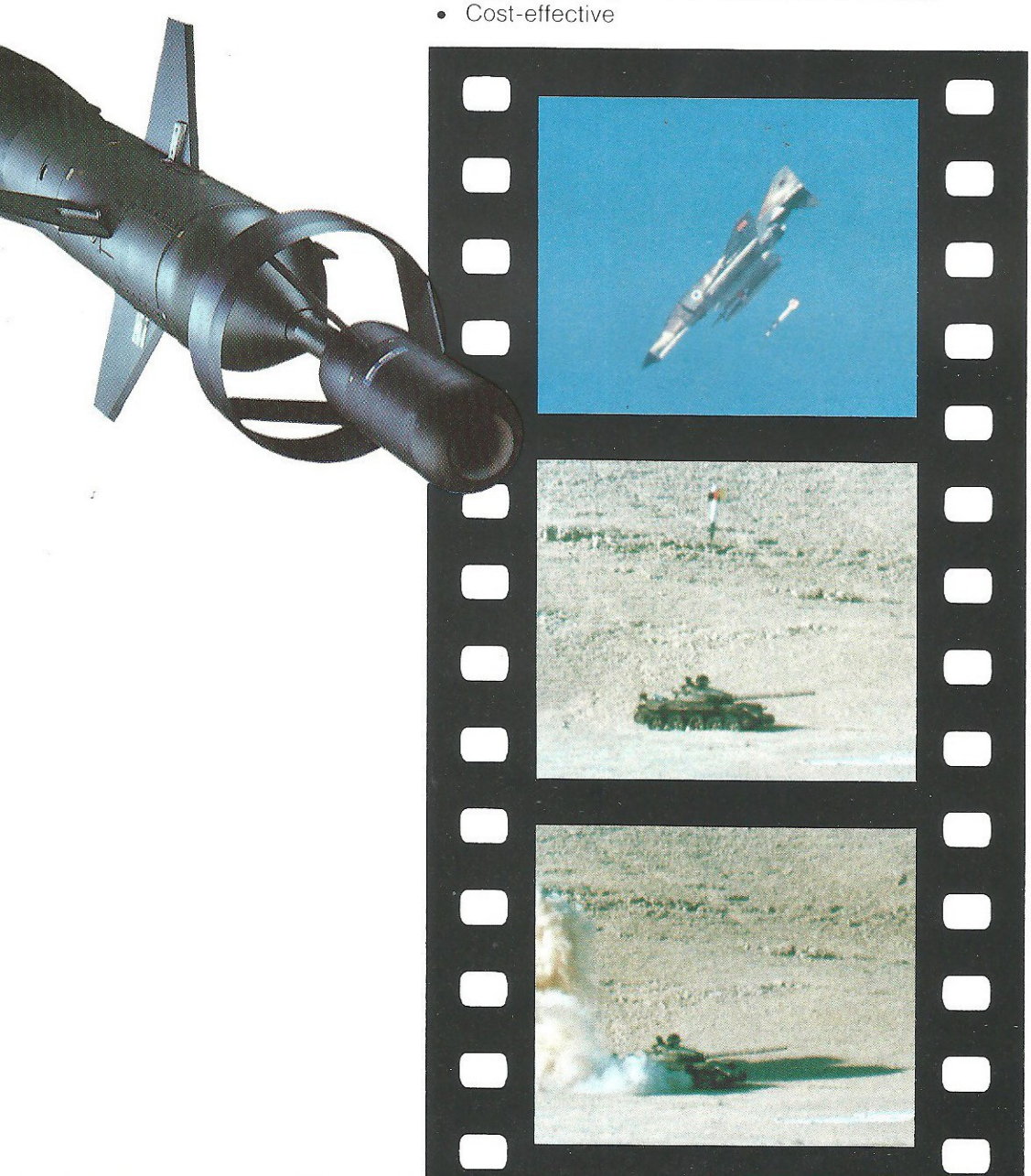
An autonomous low-cost terminal guidance kit that bridges the gap between "dumb" general purpose bombs and expensive "smart" weapons

OPHER provides the minimum "smartness" necessary to upgrade general purpose bombs with point target hit capability.

Comprising an IR seeker, guidance computer, servo-mechanical flight control unit and external control surfaces, OPHER is the ideal, affordable solution for use in large numbers against tanks and mobile ground targets.

Released through normal weapon delivery modes such as CCIP, the OPHER-fitted bomb follows the usual ballistic path for the first stage of the flight. Target acquisition by the IR seeker occurs about 1,000m from the target after which it locks on, corrects bomb trajectory and homes in.

- Fire & Forget
- Compatible with general purpose bombs (such as MK-82)
- Requires no aircraft modification or retrofit
- Autonomous operation - no target illumination necessary
- Tactical versatility - loft and pop-up maneuvers
- High accuracy - fewer sorties, lower attrition
- Cost-effective



REVEAL

Real time Electronic Video Enhancement at Long Range

Long-range observation/surveillance systems, whether ground-based, airborne, visible light or infrared, are usually limited to less range than what today's applications actually require.

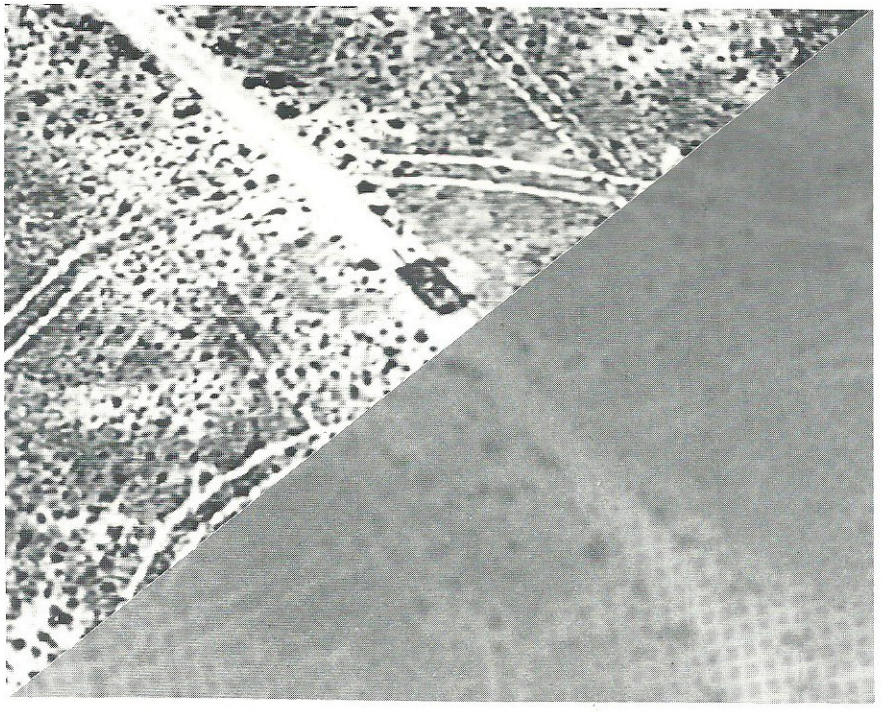
System range may be restricted by one or more factors causing problems previously considered unsolvable.

Today most of these problems can be solved and system range greatly enhanced with REVEAL.

REVEAL is an add-on unit designed to increase powers of detection, recognition and identification.

Combining state-of-the-art technologies, REVEAL doubles the effective range of most observation and surveillance systems by enhancing, stabilizing and sharpening the images they produce.

REVEAL counters the problems of low intrinsic target contrast, atmospheric attenuation, severe turbulence, electronic noise that decreases the signal-to-noise ratio, with the following techniques:

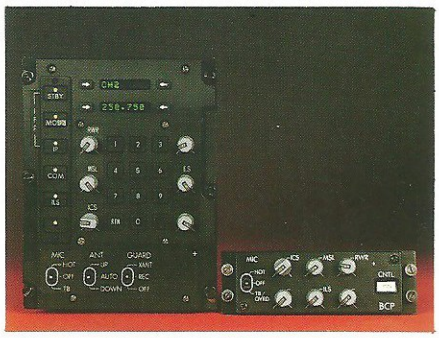


- Video stretching - to increase modulation and dynamic range
- Time Domain Filters - to improve signal-to-noise factors and reduce the effects of turbulence
- Space Domain Filters - to enhance the high frequency spectra of video signals.

Compact, convenient and operational, REVEAL is designed for a variety of applications. In the military arena it can be used in conjunction with electro-optical long range surveillance devices; as part of a tank's FLIR system for target recognition or weapon aiming, or aboard aircraft to increase electro-optical targeting range.

IACC

Integrated Airborne Communication Controller



Today's aircraft are equipped with multiple systems whose origin and operation vary. Space is at a premium in the already-cramped cockpit and more often than not, system placement is governed by available room rather than operational convenience. Introduction of new systems may require reorganization of the entire cockpit. Even minor modifications can take substantial amounts of time.

Elbit's Integrated Airborne Communication Controller offers a time-cost-and space-saving answer to the problem of too much equipment in too little space.

The system comprises:

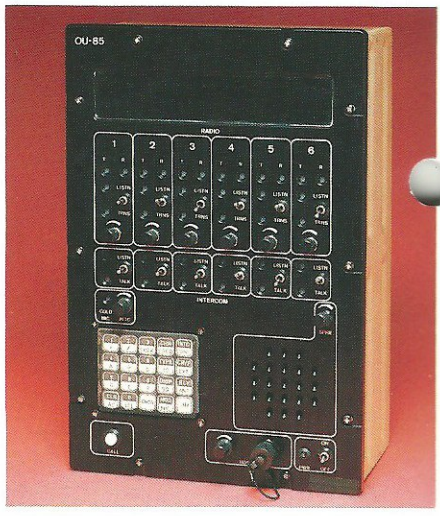
- a communication control unit (CCU) containing all electronics required for system implementation (i.e. CPU, digital audio switching matrix,synthetic voice alarm generator etc.).
- an integrated control box - the backup control and audio unit (BCAU) which is also used as a redundant backup CCU.
- additional control and audio panels (CAP) for use of other crew members, functionally similar to the BCAU.

Together, the units enable integrated and centralized control of radio and intercom communication, navigation and identification devices via a single control panel.

A substantial reduction in pilot workload as well as significant space savings are realized.

ACMS

Automatic Communication Management System



In the demanding battle environment where high reliability and top performance are vital, effective communication is every bit as essential.

Elbit's ACMS is an advanced computerized solution for smooth, efficient allocation, management and control of a wide range of radio communication devices.

Totally automatic, Elbit's ACMS provides clear, secure communication channels, and facilitates establishment of efficient communication networks through fast and simple switching. All this regardless of operator and device location.

Responding to the rapid-paced battlefield's demands the system's configuration may be changed in real time to match mission requirements.

Each operator has direct access to any communication device connected to the system. One operator can control and operate 6 radio and 6 intercom channels via a single control unit.

Geared for versatility, the ACMS is suitable for fixed or mobile communication sites, airborne relay or integrated systems. Today's system built to accommodate tomorrow's needs, the ACMS is interfaceable to a wide range of current and future communication devices.

AOS
Air Operations Simulator

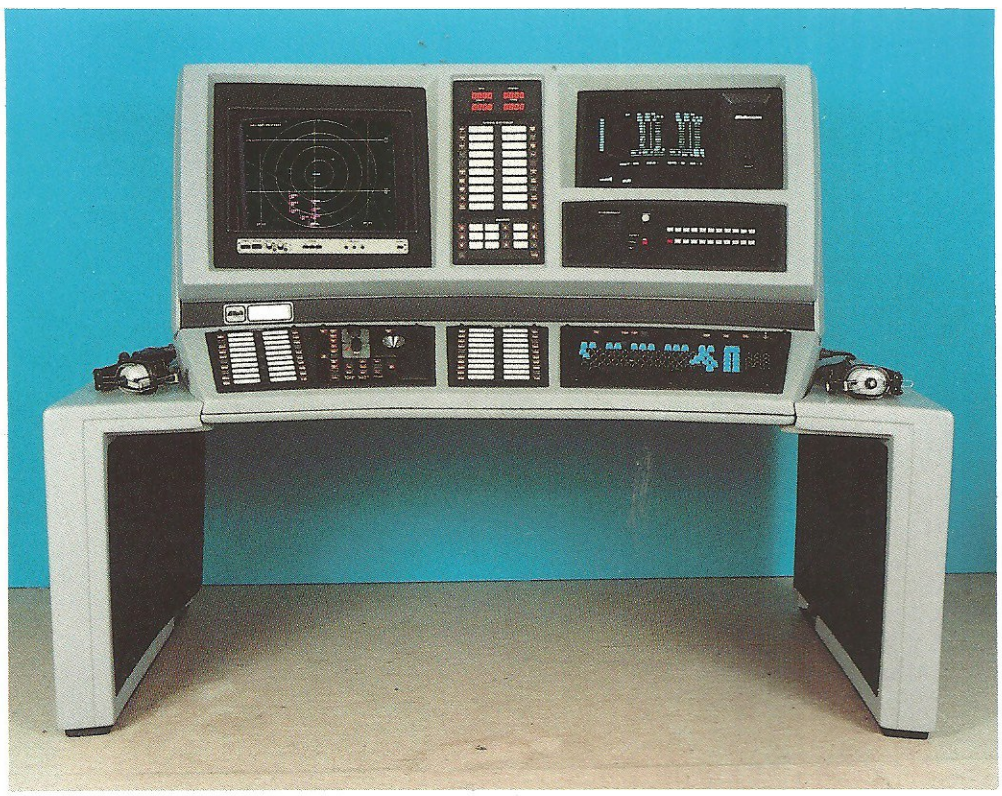
Simulation contributes both positively and cost-effectively to the state of combat readiness . The challenge is to equip force members with the optimum skills necessary to maximize their readiness by concentrating on the factors most likely to determine the outcome of air combat.

Elbit's Air Operations Simulator is an advanced computerized system which trains air commanders, operation crews and controllers in a complete spectrum of skills.

The system is capable of reproducing virtually any combat scenario in which the following skills are exercised:

- tactical decision making
- analysis of airspace structure and traffic control
- analysis of tactical doctrines and procedures
- specialized task training i.e. (GCI, search and rescue, air to ground and air to sea support)
- air traffic control

The simulated world duplicates realistic challenges and threats in terms of enemy, aircraft performance, size and operational tactics. Among the "real-life" factors faithfully reproduced are:
•15 aircraft types • 6 types of detective and secondary radars • weapons •meteorological conditions • geographic maps • fixed points and communication networks



Training with Elbit's AOS assures enhanced operational performance in a shorter time-span, fewer flight hours, and at a fraction of the "live" cost.

Israel's Leading Computer Systems House

A combination of innovative thinking, enhanced by combat feedback, and finely-tuned engineering and manufacturing capabilities has propelled Elbit into the forefront of world aviation avionics technology.

Elbit's avionic systems have accumulated more air-to-air and air-to-ground combat hours than any other systems in the western world. Their technological superiority, reflected time and time again in terms of real performance, is a result of Elbit's ability to evaluate customer needs, and to define, design and manufacture equipment and systems tailored to exact specifications and goals.

Elbit's greatest asset - its staff - is a highly-motivated group of professionals. As many of them are veterans of actual combat, it is often their feedback that ignites the spark of original, innovative ideas.

In its twenty-year existence, Elbit has acquired extensive expertise and know-how, while building up all necessary facilities for conducting full-scale development and manufacturing programs. The manufacturing plant in Carmiel is on par with the most modern in industry today. Scores of systems are produced each month, and the company exports over 50% of its products.

From design, development and prototype creation, through production and field operation phases, Elbit systems and products are backed every step of the way by an exacting Quality Assurance program.

Integrated Logistics Support is ongoing throughout the operational life-cycle of the hardware providing support and test equipment, technical training, on-site assistance in maintenance and installation, and publications.

During over a decade of design and manufacture of today's most advanced avionic systems and equipment, Elbit's highest aim - a lasting customer alliance - has remained constant.

Up and Coming.
The ideas that take wing.

Continuing a tradition of never resting on missions accomplished, Elbit is currently actively involved in the design and production of major avionic systems for the fighter planes of tomorrow. Minimizing dimensions. Maximizing efficiency. Simplifying maintenance. Building-in longevity. And delivering it all, on time. The most advanced, sophisticated mission computers, stores management, display, and other high operational value airborne systems will be Elbit's. And our combat-proven success spurs us even higher. To stay in the forefront of avionics technology. To exceed expectations. Because the sky is our field.

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